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Type T205B Balanced Tank Blanketing Regulator

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Figure 1. *Type T205B Tank Blanketing Regulator*

WARNING

Failure to follow these instructions or to properly install and maintain this equipment could result in an explosion, fire and/or chemical contamination causing property damage and personal injury or death.

Fisher® tank blanketing regulators must be installed, operated and maintained in accordance with federal, state and local codes, rules and regulations and Emerson Process Management Regulator Technologies, Inc. (Regulator Technologies) instructions.

If the regulator discharges process fluid or a leak develops in the system, service to the unit may be required. Failure to correct trouble could result in a hazardous condition.

Call a qualified service person to service the unit. Installation, operation and maintenance procedures performed by unqualified person may result in improper adjustment and unsafe operation. Either condition may result in equipment damage or personal injury. Only a qualified person must install or service the Type T205B tank blanketing regulator.

Introduction

Scope of the Manual

This Instruction Manual provides instruction for installation, startup, maintenance and parts ordering information for Type T205B tank blanketing regulator.

Product Description

Type T205B balanced tank blanketing regulator (Figure 1) is a direct-operated regulator with fully balanced plug design to reduce inlet pressure sensitivity and with large diaphragm to accurately control tank pressure at low pressure settings on tank blanketing systems. The regulator prevents a stored liquid from vaporizing into the atmosphere, reduces liquid combustibility and prevents oxidation or contamination of the liquid by reducing its exposure to air. Type T205B maintains a slightly positive pressure and thereby reduces the possibility of tank wall collapse during pump out operation.

D103750X012

Specifications

This section lists the specifications of the Type T205B Tank Blanketing Regulator. Factory specification, such as maximum temperature, maximum inlet and outlet pressures, spring range and seat or orifice size are stamped on the nameplate fastened on the regulator at the factory.

Body Sizes and End Connection Styles
See Table 1

Maximum Allowable Inlet Pressure(1)
See Table 1

Maximum Operating Inlet Pressure(1)
Gray cast iron: 150 psig / 10.3 bar
WCC Carbon steel or CF8M/CF3M Stainless steel: 200 psig / 13.8 bar

Maximum Outlet (Casing) Pressure(1)
Gray cast iron: 35 psig / 2.4 bar
WCC Carbon steel or CF8M/CF3M Stainless steel: 75 psig / 5.2 bar

Maximum Emergency Outlet Pressure to Avoid Internal Parts Damage(1)
With Nitrile (NBR) or Fluorocarbon (FKM) diaphragm: 35 psig / 2.4 bar
With Fluorinated Ethylene Propylene (FEP) diaphragm: 10 psig / 0.69 bar

Outlet (Control) Pressure Range(1)
See Table 2

Shutoff Classification per ANSI/FCI 70-3-2004
Class VI (Soft Seat)

Pressure Registration
External

Material Temperature Capabilities(1)(2)
Elastomer Parts
Nitrile (NBR): -40 to 180°F / -40 to 82°C
Fluorinated Ethylene Propylene (FEP): -20 to 180°F / -29 to 82°C
Fluorocarbon (FKM): 40 to 300°F / 4 to 149°C
Ethylene Propylene Diene (EPDM): -20 to 225°F / -29 to 107°C
Perfluoroelastomer (FFKM): 0 to 300°F / -18 to 149°C
Body Materials
Gray cast iron: -20 to 300°F / -29 to 149°C
WCC Carbon steel: -20 to 300°F / -29 to 149°C
CF8M/CF3M Stainless steel: -40 to 300°F / -40 to 149°C

Spring Case Vent Connection
1/4 NPT

Diaphragm Case Control Line Connection
1/2 NPT

Approximate Weight
17.7 pounds / 8 kg

1. The pressure/temperature limits in this Instruction Manual and any applicable standard or code limitation should not be exceeded.
2. See Table 4 for operating temperature ranges for available trim combinations.

Table 1. *Body Sizes, End Connection Styles and Maximum Allowable Inlet Pressures*

BODY SIZE		BODY MATERIAL	END CONNECTION STYLE(1)	MAXIMUM ALLOWABLE INLET PRESSURE	
Inch	DN			psig	bar
3/4 or 1	20 or 25	Gray cast iron	NPT	150	10.3
		WCC Carbon steel	NPT, CL150 RF, CL300 RF or PN 16/25/40 RF	200	13.8
		CF8M/CF3M Stainless steel(2)			

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 2. *Outlet (Control) Pressure Ranges and Spring Information*

OUTLET (CONTROL) PRESSURE RANGE		SPRING PART NUMBER	SPRING COLOR	SPRING WIRE DIAMETER		SPRING FREE LENGTH	
Inch w.c.	mbar			Inch	mm	Inch	mm
1 to 2.5(1)(2)	2.5 to 6.2(1)(2)	1B558527052	Orange	0.072	1.8	3.25	82.6
2.5 to 7(2)	6.2 to 17(2)	1B653827052	Red	0.085	2.2	3.63	92.2
7 to 16	17 to 40	1B653927022	Unpainted	0.105	2.7	3.75	95.2
0.5 to 1.2 psig	34 to 83	1B537027052	Yellow	0.114	2.9	4.31	109
1.2 to 2.5 psig	83 to 172	1B537127022	Green	0.156	4.0	4.06	103
2.5 to 4.5 psig	0.17 to 0.31 bar	1B537227022	Light Blue	0.187	4.8	3.94	100
4.5 to 7 psig	0.31 to 0.48 bar	1B537327052	Black	0.218	5.5	3.98	101

1. Do not use Fluorocarbon (FKM) diaphragm with this spring at diaphragm temperatures lower than 60°F / 16°C.
2. To achieve the published outlet pressure range the spring case must be installed pointing down.

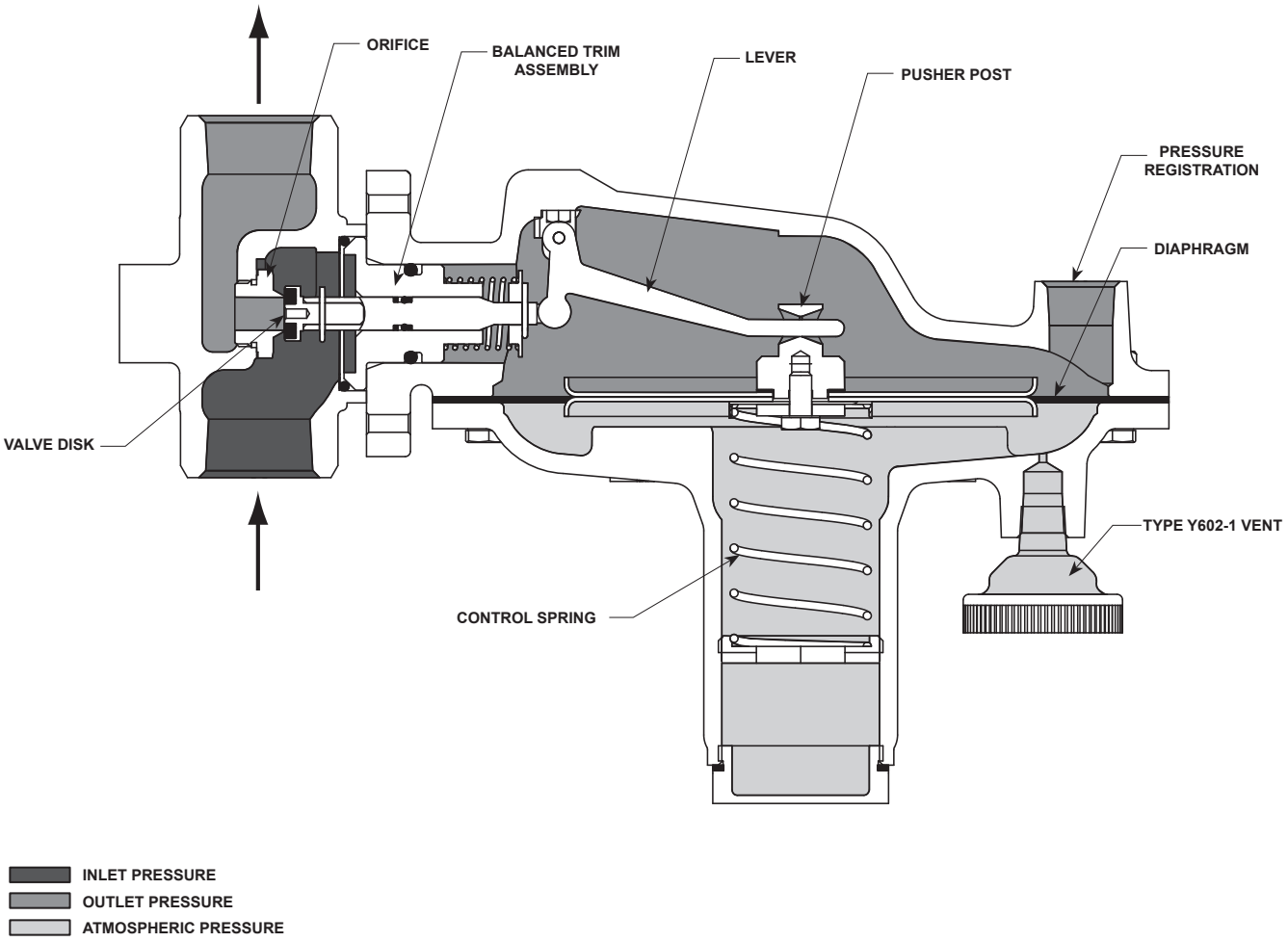


Figure 2. *Type T205B Operational Schematic*

Principle of Operation

Refer to Figure 2. Type T205B tank blanketing regulator controls the vapor space pressure over a stored liquid. When liquid is pumped out of the tank or vapors in the tank condense, the pressure in the tank decreases. Tank pressure is sensed by the actuator diaphragm. Spring force pushes the pusher post assembly, the valve disk moves away from the orifice, allowing the gas flow to increase.

When pressure in the tank increases, the actuator diaphragm is pushed. Through the action of the pusher post assembly, lever and valve stem, the valve disk moves closer to the orifice reducing gas flow.

The regulator plug is balanced (inlet pressure creates equal upward and downward forces on these components) see Figure 4, therefore, the outlet (control) pressure of the unit is not affected by inlet pressure variation.

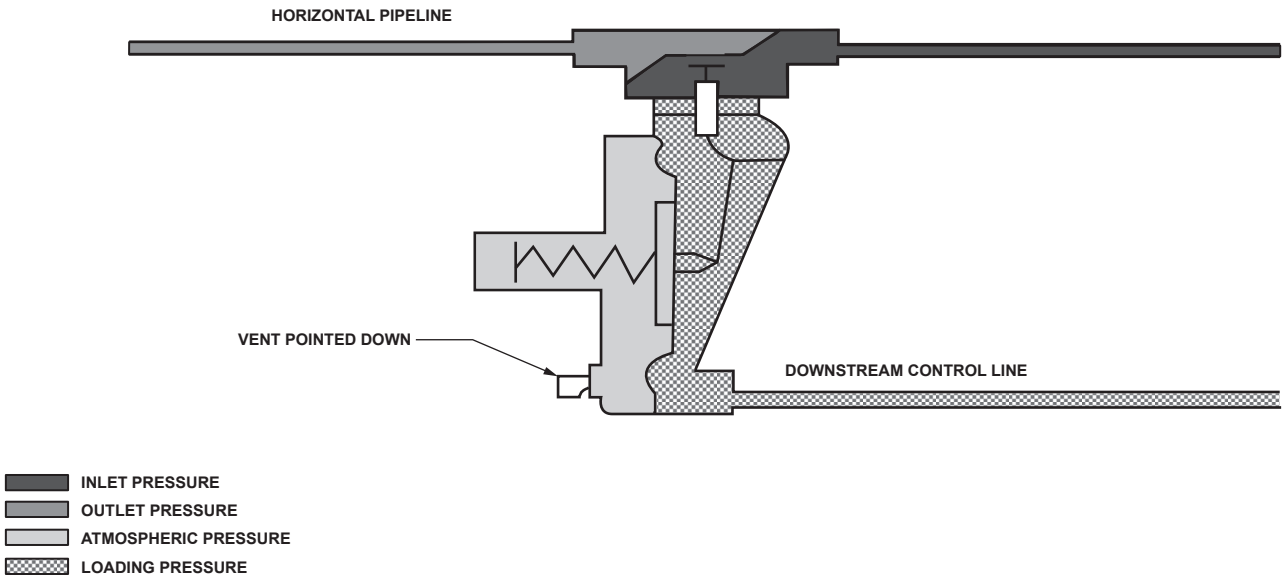


Figure 3. *Type T205B Actuator Casing Drainage*

Installation

WARNING

Personal injury, property damage, equipment damage or leakage due to escaping gas or bursting of pressure-containing parts may result if this regulator is overpressured or installed where service conditions could exceed the limits given in the Specifications section or where conditions exceed any ratings of the adjacent piping or piping connections. Refer to Overpressure Protection section for recommendations on how to prevent service conditions from exceeding those limits.

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices (as required by the appropriate code, regulation or standard) to prevent service conditions from exceeding limits.

Additionally, physical damage to the regulator could cause personal injury or property damage due to escaping gas. To avoid such injury or damage, install the regulator in a safe location.

Note

If the regulator is shipped mounted on another unit, install that unit according to the appropriate instruction manual.

1. Only personnel qualified through training and experience shall install, operate and maintain a regulator. For a regulator that is shipped separately, make sure there is no damage to or debris in the regulator. Also ensure that all tubing and piping are clean and unobstructed.
2. The regulator may be installed in any position as long as the flow through the body is in the direction indicated by the arrow on the body. For proper operation to achieve the published capacities at low setpoint, the spring case barrel should be installed pointing downward as shown in Figure 1. For complete actuator drainage, the regulator should be installed as shown in Figure 3. If continuous operation of the system is required during inspection or maintenance, install a three-valve bypass around the regulator.

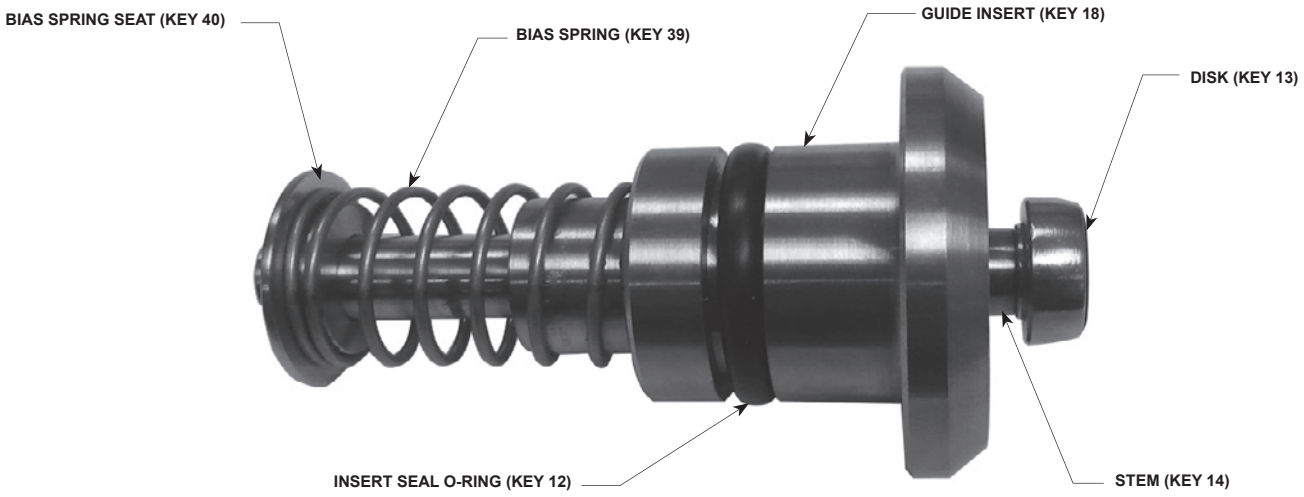


Figure 4. *Balanced Trim Assembly*

WARNING

A regulator may vent some gas to the atmosphere. In hazardous or flammable gas service, vented gas may accumulate and cause personal injury, death or property damage due to fire or explosion. Vent a regulator in hazardous gas service to a remote, safe location away from air intakes or any hazardous area. The vent line or stack opening must be protected against condensation or clogging.

3. To keep the vent assembly (key 26, Figure 6) from being plugged or the spring case (key 3) from collecting moisture, corrosive chemicals or other foreign material, point the vent down or otherwise protect it. The diaphragm casing (key 4) may be rotated in order to obtain desired positioning.
4. To remotely vent the regulator, remove the vent (key 26, Figure 6) and install obstruction-free tubing or piping into the 1/4 NPT vent tapping. Provide protection on a remote vent by installing a screened vent cap into the remote end of the vent pipe.
5. The Type T205B requires a downstream control line. Be sure to install the control line before putting the regulator into operation. Make the control line as short and straight as possible and do not install it in a location where flow may be turbulent. Restrictions in the control line can prevent proper pressure registration. When using a hand valve, it should be a full flow valve, such as a full port ball valve. Install the control line sloping downward toward the tank to prevent condensation buildup and avoid low points (or traps) that could catch liquid. The sensing line must enter the tank above the liquid level at a point that senses the vapor space pressure and is free from turbulence associated with tank nozzles or vents. The control line pipe should be at least 1/2-inch / 13 mm in diameter and increase 1 pipe size for every 10 feet / 3.05 m of control line, with setpoints less than 5-inches w.c. / 12 mbar.
6. An upstream shutoff valve is recommended to simplify maintenance to the regulator. It is advisable to install a pressure gauge between the upstream shutoff valve and the blanketing valve.

Overpressure Protection

WARNING

Personal injury, equipment damage or leakage due to escaping accumulated gas or bursting of pressure-containing parts may result if this regulator is:

- **Overpressured**
- **Used with incompatible process fluid**
- **Installed where service conditions could exceed the limits given in the Specifications section and on the appropriate nameplate**
- **Where conditions exceed any ratings of adjacent piping or piping connections**

To avoid such injury or damage, provide pressure-relieving or pressure-limiting devices to prevent service conditions from exceeding those limits.

Type T205B regulators have an outlet pressure rating lower than the inlet pressure rating. The recommended pressure limitations are stamped on the regulator nameplate. Some type of overpressure protection is needed if the actual inlet pressure can exceed the maximum operating outlet pressure rating. Common methods of external overpressure protection include relief valves, monitoring regulators, shut-off devices and series regulation. Overpressuring any portion of the regulators beyond the limits in the Specifications section may cause leakage, damage to regulator parts or personal injury due to bursting of pressure-containing parts.

If the regulator is exposed to an overpressure condition, it should be inspected for any damage that may have occurred. Regulator operation below the limits specified in the Specifications section and regulator nameplate does not preclude the possibility of damage from external sources or from debris in the pipeline.

Startup, Adjustment and Shutdown

Note

The Specifications section and Table 1 provide the maximum pressure capabilities for each regulator construction. Use pressure gauges to monitor inlet pressure and outlet pressure during startup and adjustment procedures.

Startup

1. Open shutoff valves between the tank blanketing regulator and the tank (both sensing and outlet).
2. Slowly open the supply line shutoff valve (to the blanketing valve) and leave it fully open.
3. Monitor the tank vapor space pressure.

Adjustment

WARNING

To avoid personal injury, property damage or equipment damage caused by bursting of pressure containing parts or explosion of accumulated gas, never adjust the control spring to produce an outlet pressure higher than the upper limit of the outlet pressure range (see Table 2) for that particular spring. If the desired outlet pressure is not within the range of the control spring, install a spring of the proper range according to the Diaphragm and Spring Case Area section of the maintenance procedure.

Adjust the regulator outlet (control) pressure setting to meet the requirements of the specific application. With a spring-loaded regulator, the pressure setting may be adjusted to a value within the spring range shown in Table 2. To adjust the pressure setting, perform the following steps (key numbers are referenced in Figure 6):

For internal flat circular adjusting screw

1. Remove the closing cap (key 22).
2. Use a 1-inch / 25 mm hex rod or flat screwdriver to turn the adjusting screw (key 35) either clockwise to increase outlet pressure or counterclockwise to decrease outlet pressure. Always use pressure gauge to monitor the tank blanketing gas pressure when making adjustments.
3. After making the adjustment, replace the closing cap gasket (key 25) and install the closing cap (key 22).

For external square head adjusting screw

1. Loosen the locknut (key 20).
2. Turn the adjusting screw (key 35) either clockwise to increase outlet pressure or counterclockwise to decrease outlet pressure. Always use pressure

gauge to monitor the tank blanketing gas pressure when making adjustments.

3. After making the adjustment, tighten the locknut (key 20).

Shutdown

1. Close the nearest upstream shutoff valve and then close the nearest downstream shutoff valve to vent the pressure in the regulator properly.
2. Close the valve in the control line and vent the pressure in the lower casing.
3. Open the vent valve between the regulator and the downstream shutoff valve nearest to it. All pressure between these shutoff valves is released through the open vent valve, since a Type T205B remains open in response to the decreasing downstream pressure.

Maintenance

Due to normal wear or damage that may occur from external sources, inspect and maintain the regulator periodically. The frequency of inspection and replacement depends on the severity of service conditions, test results found during the annual test and on applicable codes and regulations. In accordance with applicable National or Industry codes, standards and regulations/recommendations, all hazards covered by specific tests after final assembling before applying the CE marking, shall also be covered after every subsequent reassembly at installation site, in order to ensure that the equipment will be safe throughout its intended life.

WARNING

To avoid personal injury, property damage or equipment damage caused by sudden release of pressure or explosion of accumulated gas, do not attempt any maintenance or disassembly without first isolating the regulator from system pressure and relieving all internal pressure from the regulator.

Regulators that have been disassembled for repair must be tested for proper operation before being returned to service. Only parts manufactured by Regulator Technologies should be used for repairing Fisher® regulators. Restart gas utilization equipment according to normal startup procedures.

General Maintenance

1. Visually inspect the regulator and its parts for any damage.
2. Ensure tight connections, tight seals and safe operation. If there is an evidence of leakage or unstable internal motion, a rebuild with seal replacement and relubrication may be necessary.
3. Observe the blanketing pressure.
4. Inspect the inlet pressure for the proper pressure (stamped on the regulator nameplate).

Body Area

Perform the following procedure to gain access to orifice and body O-ring. Release all pressure from the diaphragm casing and open the disk assembly before performing the following steps. Key numbers are referenced in Figure 6.

1. Remove the cap screws (key 2) and separate the diaphragm casing (key 4) from the body (key 1).
2. Remove and inspect the body seal O-ring (key 11) and the backup ring (key 49).
3. Inspect and replace the orifice (key 5) if necessary. Protect the orifice seating surface during disassembly and assembly. Lubricate the threads of the replacement orifice with a good grade of light grease and install with 340 to 470 inch-pounds / 38.5 to 53.1 N•m of torque.
4. Place back-up ring (key 49) into the body (key 1). Then place the body seal O-ring (key 11) into the body.
5. Place the diaphragm casing (key 4) on the body (key 1). Secure the diaphragm casing to the body with the cap screws (key 2) using 90 to 126 inch-pounds / 10.2 to 14.2 N•m of torque.

Diaphragm and Spring Case Area

Perform the following procedure to gain access to the spring, diaphragm, lever assembly, stem and disk assembly. Release all pressure from the diaphragm casing before performing the following steps. Key numbers are referenced in Figure 6.

1. **For internal flat circular adjusting screw -** remove the closing cap (key 22) and closing cap gasket (key 25).
   For external square head adjusting screw - loosen the locknut (key 20).

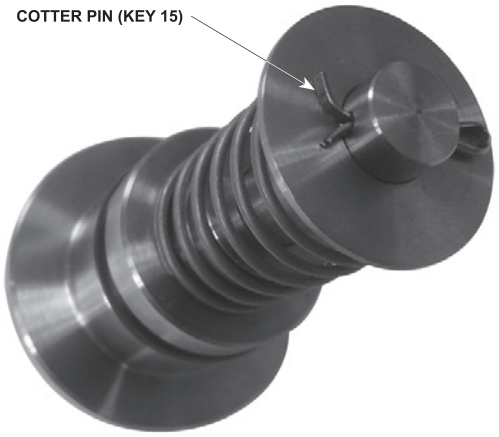


Figure 5. *Proper Bending of Cotter Pin*

2. Turn the adjusting screw (key 35) counterclockwise to remove all the compression from the control spring (key 6).

3. If the only maintenance procedure to be performed is the changing of the control spring (key 6):
   For internal flat circular adjusting screw
   a. Remove the adjusting screw (key 35).
   b. Take out the control spring and replace with the desired spring.
   c. Reinstall the adjusting screw.
   d. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
   e. Change the stamped spring range on the nameplate. Skip to step 16.

   For external square head adjusting screw
   a. Remove the adjusting screw (key 35) and locknut (key 20).
   b. Remove the closing cap (key 22), closing cap gasket (key 25) and upper spring seat (key 19).
   c. Take out the control spring and replace with the desired spring.
   d. Reinstall the upper spring seat, closing cap gasket, closing cap, locknut and adjusting screw.
   e. Adjust the outlet pressure to the desired control pressure setting, refer to steps 2 and 3 of Adjustment section.
   f. Change the stamped spring range on the nameplate. Skip to step 16.

4. If the further maintenance to the internal diaphragm casing (key 4) parts is required, remove the hex nuts (key 23) and spring case cap screws (key 24). Remove the diaphragm (key 10) plus attached parts by tilting them so that the pusher post (key 8) slips off the lever assembly (key 16). To separate the diaphragm from the attached parts, unscrew the diaphragm head cap screw (key 38) from the pusher post. If the only maintenance procedure to be performed is the replacement of the diaphragm components, skip to step 11.

5. To replace the lever assembly (key 16), remove the machine screws (key 17). If the only future maintenance procedure to be performed is the replacement of the lever assembly, skip to step 10.

6. Remove the guide insert (key 18) and stem (key 14) assembly carefully from the lower casing (key 4). Remove the cotter pin (key 15), bias spring seat (key 40) and bias spring (key 39) then pull the stem out of the guide insert. Apply a moderate coating of lubricant to the stem, install the stem seal O-ring (key 30) and the two back-up rings (key 37) onto the valve stem.

7. Remove the cotter pin (key 15) to replace the disk assembly (key 13).

8. Install the disk assembly (key 13) to stem (key 14) and secure with cotter pin (key 15). Insert the stem into guide insert (key 18), put on bias spring (key 39) and bias spring seat (key 40), secure with another cotter pin. Use plier or equivalent tool to bend the cotter pin ends after insertion (see Figure 5).

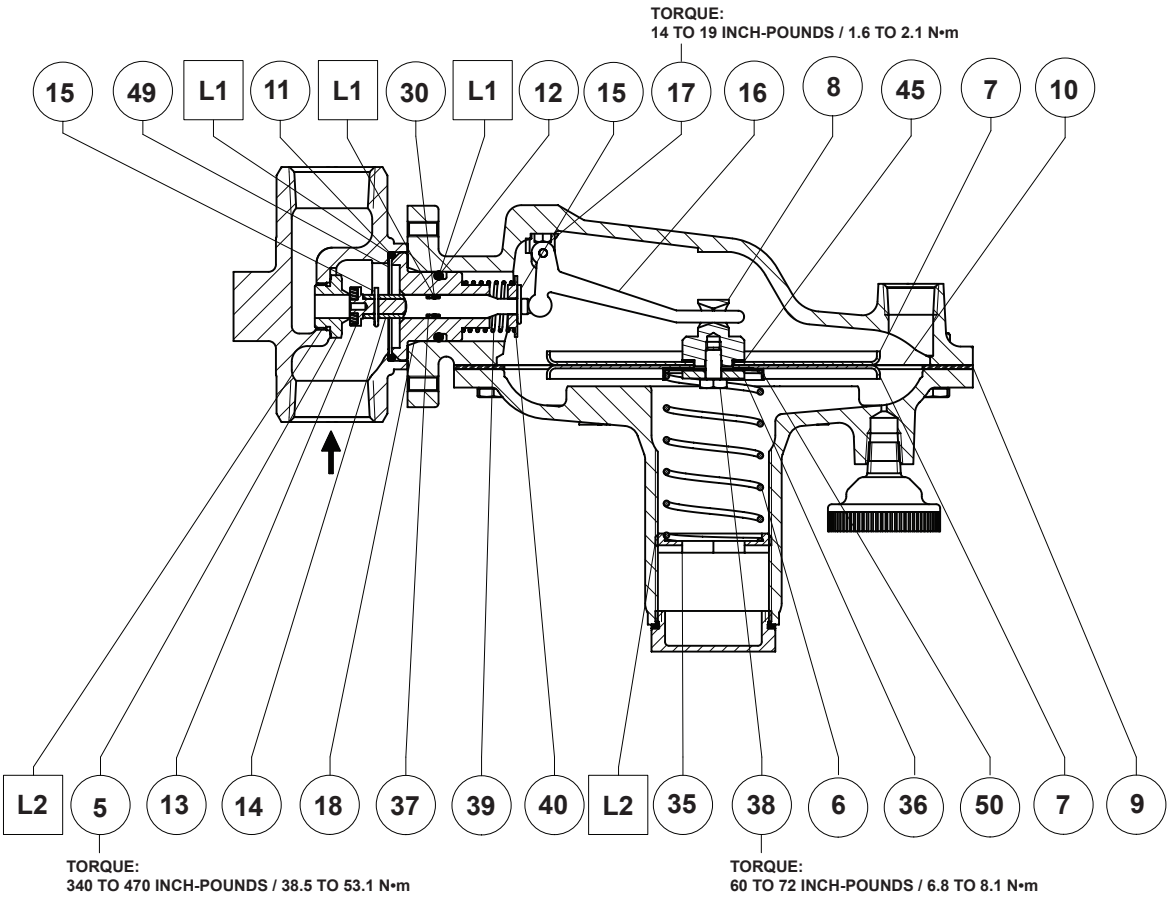
9. Install the stem (key 14) and guide insert (key 18) assembly into the lower casing (key 4) and perform Body Area Maintenance procedure steps 4 through 5 as necessary.

10. Install the lever assembly (key 16) into the stem (key 14) and secure the lever assembly with the machine screws (key 17) using 14 to 19 inch-pounds / 1.6 to 2.1 N•m of torque.

11. Always use a new diaphragm head gasket (key 45). Install the parts on the pusher post (key 8) in the following order:

    • Diaphragm head gasket
    • Diaphragm head (key 7)
    • Diaphragm (key 10)
    • Diaphragm head
    • Lower spring seat (key 50)
    • Washer (key 36)

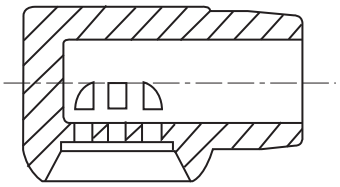
    Secure the parts with diaphragm head cap screw (key 38) using 60 to 72 inch-pounds / 6.8 to 8.1 N•m of torque.



1. Lubricants must be selected such that they meet the temperature requirements.

Figure 6. *Type T205B Regulator Assembly*

12. Install the pusher post (key 8) and attached parts onto the lever assembly (key 16).
13. Install the spring case (key 3) on the lower casing (key 4) so that the vent assembly (key 26) is correctly oriented and secure them with the spring case cap screws (key 24) and hex nuts (key 23) to finger tightness only.
14. Install the parts into the spring case (key 3). Follow the order below:
    For internal flat circular adjusting screw
    a. Control spring (key 6)
    b. Adjusting screw (key 35)
    For external square head adjusting screw
    a. Control spring (key 6)
    b. Upper spring seat (key 19)
    c. Closing cap gasket (key 25)
    d. Closing cap (key 22)
    e. Locknut (key 20)
    f. Adjusting screw (key 35)
15. Turn the adjusting screw (key 35) clockwise until there is enough control spring force to provide proper slack to diaphragm (key 10). Using a crisscross pattern, finish tightening the spring case cap screws (key 24) and hex nuts (key 23) to 90 to 126 inch-pounds / 10.2 to 14.2 N•m of torque. Adjust the outlet pressure to the desired control pressure setting, refer to the Adjustment section.
16. Connect the downstream control line and refer to the Startup section before putting the regulator back in operation.



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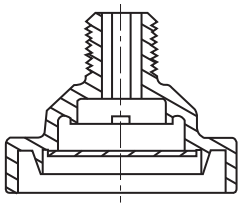
SPRING CASE SIDEWAYS

TYPE Y602-12 VENT



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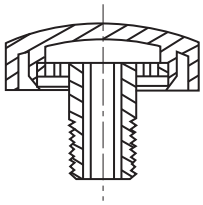
SPRING CASE DOWNWARD

TYPE Y602-1 VENT



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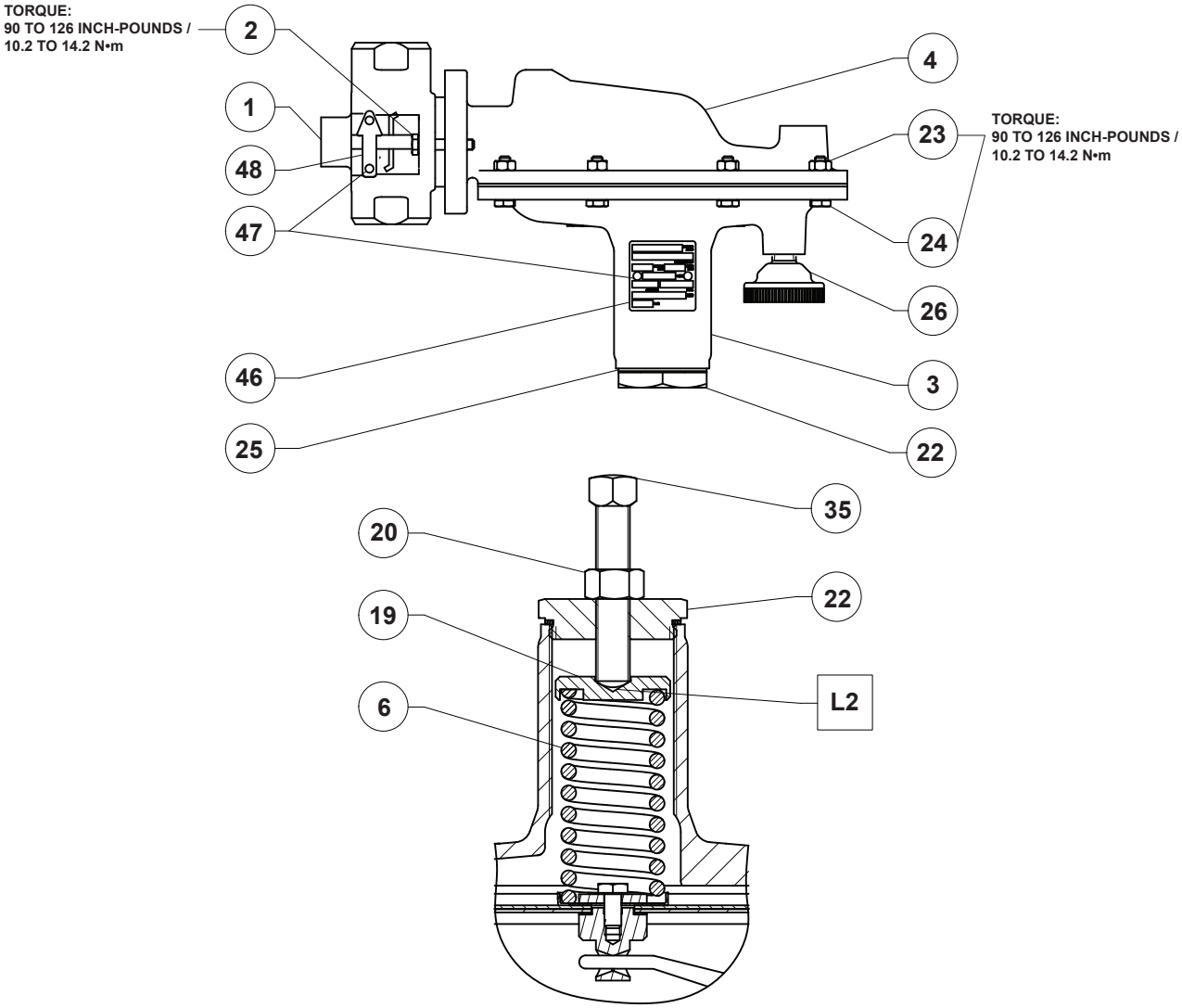
SPRING CASE UPWARD

TYPE Y602-11 VENT



EXTERNAL SQUARE HEAD ADJUSTING SCREW ASSEMBLY OPTION(1)

ERSA00627

☐ **APPLY LUBRICANT (L)(2)**
L2 = ANTI-SEIZE COMPOUND

1. For 1.2 to 2.5 psig / 83 to 172 mbar, 2.5 to 4.5 psig / 0.17 to 0.31 bar and 4.5 to 7 psig / 0.31 to 0.48 bar spring ranges only.
2. Lubricant must be selected such that they meet the temperature requirements.

Figure 6. *Type T205B Regulator Assembly (continued)*

Parts Ordering

When corresponding with your local Sales Office about this regulator, include the type number and all other pertinent information stamped on the nameplate.

Specify the eleven-character part number when ordering new parts from the following parts list.

Parts List

Key	Description	Part Number
	Spare Parts Kit (included are keys 9, 10, 11, 12, 15, 25, 30, 37 and 45) (see Table 4 for Trim Option Codes)	
	Standard Trim	RT205BXDD12
	NN Trim	RT205BXNN12
	VV Trim	RT205BXVV12
	TV Trim	RT205BXTV12
	TK Trim	RT205BXTK12
	TE Trim	RT205BXTE12
1	Body	See Table 3
2	Cap Screw (2 required)	
	For WCC Carbon steel or gray cast iron casing	1C856228992
	For CF8M/CF3M Stainless steel casing	18B3456X012
3	Spring Case	
	Gray cast iron	ERSA02558A0
	WCC Carbon steel	ERSA00195A1
	CF8M/CF3M Stainless steel	ERSA00195A0
4	Lower Casing	
	Gray cast iron	47B2271X012
	WCC Carbon steel	ERSA00196A1
	CF8M/CF3M Stainless steel	ERSA00196A0
5*	Orifice 3/8-inch / 9.5 mm	
	303 Stainless steel **(standard)**	0B042235032
	316 Stainless steel	0B0422X0012
6	Spring	See Table 2
7	Diaphragm Head (2 required)	
	Stainless steel	17B9723X032
8	Pusher Post	
	For Fluorinated Ethylene Propylene (FEP) diaphragm	
	316 Stainless steel	ERSA00876A0
	For Nitrile (NBR) or Fluorocarbon (FKM) diaphragm	
	303 Stainless steel **(standard)**	18B3462X032
	316 Stainless steel	18B3462X012
9	Diaphragm Gasket (for FEP diaphragm)	
	Nitrile (NBR)	ERSA00713A0
10*	Diaphragm	
	Fluorinated Ethylene Propylene (FEP) **(standard)**	ERSA00193A0
	Nitrile (NBR)	17B9726X012
	Fluorocarbon (FKM)	23B0101X052
11*	Body Seal O-ring	
	Nitrile (NBR)	1H993806992
	Fluorocarbon (FKM)	1H9938X0012
	Perfluoroelastomer (FFKM)	1H9938X0042
	Ethylene Propylene Diene (EPDM)	1H9938X0022
12*	Insert Seal O-ring	
	Nitrile (NBR)	1B885506992
	Fluorocarbon (FKM)	1B8855X0012
	Perfluoroelastomer (FFKM)	1B8855X0062
	Ethylene Propylene Diene (EPDM)	1B8855X0022
13*	Disk Assembly	
	Stainless steel with	
	Nitrile (NBR)	ERSA01112A0
	Fluorocarbon (FKM)	ERSA01112A1
13*	Disk Assembly (continued)	
	Stainless steel with	
	Perfluoroelastomer (FFKM)	ERSA01112A2
	Ethylene Propylene Diene (EPDM)	ERSA01112A3
14	Stem	
	Stainless steel	ERSA00240A0
15*	Cotter Pin (2 required)	
	Stainless steel	1A866537022
16	Lever Assembly	
	Stainless steel	1B5375000B2
17	Machine Screw (2 required)	
	Stainless steel	19A7151X022
18	Guide Insert	
	Stainless steel	ERSA00239A0
19	Upper Spring seat(1), Zinc-plated steel	1J618124092
20	Lock Nut(1), Steel	1A413224122
22	Closing Cap	
	Plastic **(standard)**	T11069X0012
	Steel	1E422724092
	Stainless steel	1E422735072
	Zinc-plated steel(1)	ERSA01809A0
23	Hex Nut (8 required)	
	For WCC Carbon steel or gray cast iron casing	1A345724122
	For CF8M/CF3M Stainless steel casing	1A3457K0012
24	Spring Case Cap Screw (8 required)	
	For WCC Carbon steel or gray cast iron casing	1A579724052
	For CF8M/CF3M Stainless steel casing	1A5797T0012
25*	Closing Cap Gasket, Neoprene (CR)	1P753306992
26	Vent Assembly	
	Spring Case Sideways **(standard)** (Type Y602-12)	27A5516X012
	Spring Case Down (Type Y602-1)	17A6570X012
	Spring Case Up (Type Y602-11)	17A5515X012
30*	Stem Seal O-ring	
	Nitrile (NBR)	1D687506992
	Fluorocarbon (FKM)	1N430406382
	Perfluoroelastomer (FFKM)	1D6875X0082
	Ethylene Propylene Diene (EPDM)	1D6875X0032
35	Adjusting Screw	
	Internal Flat Circular, **(standard)**	1B537944012
	External Square Head	
	For green or light blue spring	10B3080X012
	For black spring	1D995448702
36	Washer, Plated steel	18B3440X012
37*	Backup Ring, PTFE (2 required)	1K786806992
38	Diaphragm Head Cap Screw, Zinc-plated steel	1B290524052
39	Bias spring, Stainless steel	GE30193X012
40	Bias spring seat, Stainless steel	ERSA00202A0
45*	Diaphragm Head Gasket, Composition	18B3450X012
46	Nameplate	- - - - - - - - - -
47	Drive Screw (2 required), Stainless steel	1A368228982
48	Flow Arrow	- - - - - - - - - -
49	Backup Ring, Stainless steel	18B3446X012
50	Lower Spring Seat, Zinc-plated steel	1B636325062

* Recommended spare part

1. Use for external square head adjusting screw assembly option for 1.2 to 2.5 psig / 83 to 172 mbar, 2.5 to 4.5 psig / 0.17 to 0.31 bar and 4.5 to 7 psig / 0.31 to 0.48 bar spring ranges only.

Table 3. *Body Materials and Part Numbers (Body, key 1)*

BODY MATERIAL	END CONNECTION STYLE(1)	PART NUMBER	
		3/4-Inch / DN 20 Body	1-Inch / DN 25 Body
Gray Cast Iron	NPT	ERSA01588A0	ERSA01755A0
WCC Carbon steel	NPT	ERSA00230A1	ERSA00194A1
	CL150 RF	ERSA01469A0	ERSA01469A1
	CL300 RF	ERSA01469A2	ERSA01469A3
	PN 16/25/40 RF	ERSA01469A4	ERSA01469A5
CF8M/CF3M Stainless steel(2)	NPT	ERSA00230A0	ERSA00194A0
	CL150 RF	ERSA01469A6	ERSA01469A7
	CL300 RF	ERSA01469A8	ERSA01469A9
	PN 16/25/40 RF	ERSA01469B0	ERSA01469B1

1. All flanges are welded. Weld-on flange dimension is 14 inches / 356 mm face-to-face.
2. Pipe nipples and flanges are 316 Stainless steel for flanged body assemblies.

Table 4. *Type T205B Trim Option Code*

TRIM OPTION CODE	DIAPHRAGM MATERIAL	DISK AND O-RING MATERIAL	OPERATING TEMPERATURE RANGES
Standard	Fluorinated Ethylene Propylene (FEP)	Nitrile (NBR)	-20 to 180°F / -29 to 82°C
NN	Nitrile (NBR)	Nitrile (NBR)	-40 to 180°F / -40 to 82°C
VV	Fluorocarbon (FKM)	Fluorocarbon (FKM)	40 to 300°F / 4 to 149°C
TV	Fluorinated Ethylene Propylene (FEP)	Fluorocarbon (FKM)	40 to 180°F / 4 to 82°C
TK	Fluorinated Ethylene Propylene (FEP)	Perfluoroelastomer (FFKM)	0 to 180°F / -18 to 82°C
TE	Fluorinated Ethylene Propylene (FEP)	Ethylene Propylene Diene (EPDM)	-20 to 180°F / -29 to 82°C

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